

① Simplify

$$\textcircled{a} \frac{x^2 \cdot x^3}{x^7} = \frac{x^5}{x^7} = x^{-2} = \frac{1}{x^2}$$

$$\textcircled{b} (3xy^2)^3 = 3^3 x^3 y^6 = 27x^3y^6$$

$$\textcircled{c} \frac{(3x^2y^4)^2}{xy} = \frac{3^2 x^4 y^8}{xy} = 9x^3y^7$$

② Rationalize

$$\textcircled{a} \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{\sqrt{4}} = \frac{\sqrt{2}}{2}$$

$$\textcircled{b} \frac{3}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{3}}{3} = \sqrt{3}$$

$$\textcircled{c} \frac{1}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}} = \frac{\sqrt[3]{4}}{2}$$

③ Simplify

$$\textcircled{a} \sqrt[2]{x^4}$$

$$\sqrt[2]{x \cdot x \cdot x \cdot x} = x^2$$

$\sqrt[2]{2} = 2$   
 $\sqrt{x} = x$

$$\textcircled{b} \sqrt[2]{x^5}$$

$$\sqrt{x \cdot x \cdot x \cdot x \cdot x} = x^2 \sqrt{x}$$

$$\textcircled{c} \sqrt[3]{x^7 y^2}$$

$$x^2 \sqrt[3]{xy^2}$$

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Homework

(1) 16  
 (2) 4  
 (3) -9  
 (4) 4  
 (5)  $\sqrt{-25} = 5i$   
 (6) 5

(9)  $x\sqrt{20x}$   
 (10)  $\sqrt[3]{81x^2}$   
 (11)  $x^2\sqrt{50x}$   
 (12)  $a^3\sqrt[3]{32a^2}$   
 (13)  $y^3\sqrt{54y}$   
 (14)  $a^3b^3\sqrt{200b}$   
 (15)  $x^2y\sqrt[3]{-250y^2}$

(27)  $\frac{\sqrt{2x}}{2}$   
 (28)  $\frac{\sqrt{40x}}{8x}$  or  $\frac{\sqrt{10x}}{4x}$   
 (29)  $\frac{\sqrt[3]{4x}}{2}$   
 (30)  $\frac{\sqrt[3]{45x^2}}{3x}$

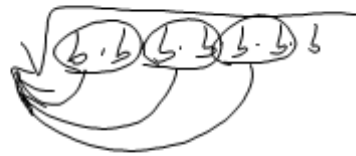
Done

$$(14) \sqrt{200a^6b^7}$$

$$\sqrt[2]{a^6} = a^3$$



$$\sqrt[2]{b^7} = b^3 \sqrt{b}$$



$$a^3 b^3 \sqrt{200b}$$

(29)

$$\frac{\sqrt[3]{x}}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}} = \frac{\sqrt[3]{4x}}{2}$$

$$\sqrt{8} = \sqrt{4} \cdot \sqrt{2}$$

↓

$$2\sqrt{2}$$

Simplified

$$\frac{4}{8} = \frac{1}{2}$$

$$\sqrt{12} = \sqrt{4} \cdot \sqrt{3}$$

↓

$$2\sqrt{3}$$

$$\sqrt{27} = \sqrt{9} \cdot \sqrt{3}$$

↓

$$3\sqrt{3}$$

$$\sqrt{50} = \sqrt{25} \cdot \sqrt{2}$$

↓

$$5\sqrt{2}$$

Sq. root  
Watch for  
factors of

1  
4  
9  
16  
25  
36  
49  
64  
81  
100

Watch for  $\sqrt{\quad}$ 

1  
4  
9  
16  
25  
36  
49  
64  
81  
100

Watch for  $\sqrt[3]{\quad}$ 

1  
8  
27  
64  
125  
216  
343  
512  
729  
1000

Simplify

$$\sqrt[3]{9} \sqrt[3]{8} = 3 \cdot 2\sqrt{2}$$

$$\textcircled{1} \sqrt{72} = \sqrt{36 \cdot 2} = \boxed{6\sqrt{2}}$$

$$\textcircled{2} \sqrt{200} = \sqrt{100 \cdot 2} = \boxed{10\sqrt{2}}$$

$$\textcircled{3} \sqrt{81} = \boxed{9}$$

$$\textcircled{4} \sqrt[3]{54} = \sqrt[3]{27 \cdot 2} = \boxed{3 \cdot \sqrt[3]{2}}$$

$$\textcircled{5} \sqrt[3]{250} = \sqrt[3]{125 \cdot 2} = \boxed{5 \sqrt[3]{2}}$$

# Sect. 7.2

Simplify number of #9-15

#16-27

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If you were gone  
need #1-30<sup>to</sup> be caught up

$\sqrt{\quad}$
1
4
9
16
25
36
49
64
81
100

$\sqrt[3]{\quad}$
1
8
27
64
125
216
343
512
729
1000